

Richmond Refinery LPS Bulletin – Reliability

High Pressure Critical Check Valve External Leak



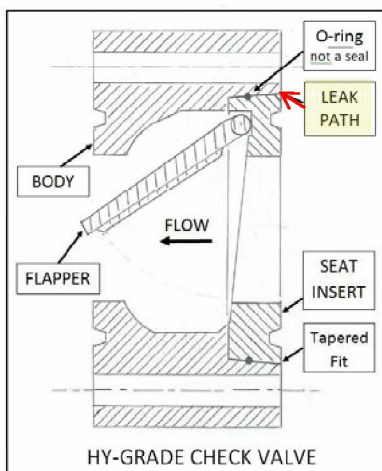
IMPACT ERM
Loss ID# 29069

Location: Hydroprocessing Division, RLOP - Heavy Neutral Cracker (HNC)

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Picture of Leaking Valve



Cutaway view showing details

Tenets of Operations Violated:

Tenet 10 – Always involve the right people in decisions that affect procedures and equipment.

Incident Description:

Around Dec. 13th, 2011, the Heavy Neutral Cracker Unit at Richmond's Lube Oil Plant (RLOP) experienced a delayed outage for approximately 3.5 days while a leak on a high pressure feed "Hy-Grade" check valve was leak seal clamped. The failure was discovered shortly after start-up from an unrelated outage where the valve was found to be leaking at a rate of 1-2 drops per minute from a joint between two valve body components. Stop Work Authority was used effectively, and operations elected to delay start-up until the leaking valve joint was fitted with a leak seal clamp for continued operation.

Investigation Findings:

- 1) Hydroprocessing Backflow Prevention Best Practice recommends that "critical" check valves be inspected and serviced as required during every Major Turnaround. There are currently no specific specialized instructions on how to service "Hy Grade" check valves.
- 2) Valve was fully disassembled and reassembled by persons that may not fully recognize the sealing mechanism and the additional attention needed for the required dimensional and surface quality checks to assure proper performance after re-assembly.

Lessons Learned / Business Practices:

- 1) "Precision Engineered Hy-Grade Check Valves" rely heavily on a precise interference taper fit between the body and seat components. These two components are not intended to be separated by non-OEM personnel during routine "open and inspect" activities.
- 2) Do not assume that preferred service providers have knowledge to service ALL equipment in their general service category.
- 3) Identify early any equipment which may have levels of complexity or tight tolerances outside normal service provider capabilities.

Recommendations:

- 1) Any service of "Hy-Grade" Check Valves beyond basic external inspection should be performed by OEM. Hy-Grade (OEM) does not recognize any local or other "Authorized Service Providers".
- 2) Provide permanent tags on "Hy-Grade Check Valves" informing that "Service Shall be Provided by OEM Only".
- 3) Modify procedures so that Hy-Grade Valves are exclusively serviced by the OEM for maintenance and repairs.
- 4) Add remaining additional Hy-Grade check valves to SD valve list for full OEM inspection and maintenance for next outage.

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